

**285** Omalizumab Utilization Trends for Asthma in the US from 2003-2015

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**RATIONALE:** Utilization trends for omalizumab have not been previously described, despite availability of omalizumab since its 2003 FDA approval for asthma.

**METHODS:** Using a large US insurance database, OptumLabs™ Data Warehouse, that includes privately insured and Medicare Advantage patients we identified omalizumab users in 2003-2015. Individuals with diagnostic codes for chronic idiopathic urticaria after 7/1/2013 were excluded from the cohort. New use of omalizumab was calculated for the entire cohort. Persistence of use, defined as the duration of use from initiation to discontinuation, was calculated in users who had pharmaceutical coverage for at least 6 months after stopping omalizumab to limit censoring based on insurance coverage.

**RESULTS:** We identified 8,545 omalizumab users from 2003-2015 who met our inclusion criteria (64% female, 72% white, 11% Black, 9% Hispanic, 3% Asian, and 5% unknown race/ethnicity). The rate of individuals starting omalizumab for asthma had an initial peak in 2005 at 9.56 new users per 100,000 insured people and declined until 2012 to 5.22 new users per 100,000 insured people. New omalizumab users have increased since 2012, peaking in 2015 with 12.13 new users per 100,000 insured people. The majority of individuals who started omalizumab used it for <1 year (59%); another 14% used for 1-2 years, 7% for 2-3 years, 3% for 3-4 years, 2% for 4-5 years, and 15% for > 5 years.

**CONCLUSIONS:** Since 2012, the rate of new omalizumab users for asthma increased more than two-fold. Fewer than half of those who start omalizumab continue for longer than 1 year.

**286** Dupilumab Improves Sense of Smell and Reduces Anosmia Among Patients with Nasal Polyposis and Chronic Sinusitis: Results from a Phase 2a Trial

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**RATIONALE:** Loss of smell is a major consequence for chronic sinusitis patients with nasal polyps and is a severity marker with significant impact on quality of life. In a phase 2a study in nasal polyposis (NP) patients, dupilumab significantly improved endoscopic, radiographic and clinical endpoints. The effect of dupilumab on smell function is evaluated here.

**METHODS:** Sixty adult NP patients refractory to intranasal corticosteroids were assigned (1:1) to 16 weeks of weekly subcutaneous 300mg dupilumab (including one 600mg loading dose) or placebo on top of daily mometasone furoate nasal spray (MFNS). Smell function was assessed by University of Pennsylvania Smell Identification Test (UPSIT; range 0-40), daily patient assessment of smell loss severity (range 0-3), and Sino-Nasal Outcome Test (SNOT-22) item 12: "decreased sense of smell/taste (range 0-5)."

**RESULTS:** At week 16, significant (p<0.0001) improvements in dupilumab versus placebo were observed in UPSIT (LS mean [LSM] difference

of 14.78 [95%CI: 10.90, 18.65]) and daily AM patient assessment of smell loss severity (LSM difference of -1.28 [95%CI: -1.73, -0.84]). Patients' proportions in the anosmia UPSIT category decreased from 83.3% (n=25) to 10.7% (n=3) with dupilumab vs. from 73.3% (n=22) to 65.2% (n=15) with placebo. Similarly, dupilumab significantly improved SNOT-22 item related to smell/taste (LSM difference from placebo: -2.06; p<0.001). Injection site reactions, headache, and nasopharyngitis were the most frequently reported adverse events with dupilumab.

**CONCLUSIONS:** In NP patients on daily MFNS background therapy, dupilumab significantly improved the sense of smell and reduced anosmia over a 16 week treatment period.

**287** Activation of Basophils and Eosinophils By EtOH in Alcohol Sensitive Patients with CRS and Asthma

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**RATIONALE:** Reactions to alcoholic beverages are commonly reported in patients with CRS and asthma, especially those with concomitant aspirin-exacerbated respiratory disease. This effect appears to be greatest with red wine, but is noted with other beverages. We therefore explored the ability of ethanol and polyphenolic compounds commonly found in alcoholic beverages to directly activate eosinophils and basophils.

**METHODS:** Eosinophils and basophils were obtained from subjects with asthma/CRS with and without alcohol sensitivity. Eosinophils were purified by density centrifugation and negative selection magnetic affinity purification. Basophils were studied using fresh whole blood isolates and basophils identified via flow cytometry as the CD123+ granulocyte population. Both cell lines were exposed to components of red wine including ethanol, red wine extract and two representative polyphenolic compounds, resveratrol and catechin. Evidence of granulocyte activation was then measured via flow cytometry and ELISA for basophils and eosinophils respectively.

**RESULTS:** Basophil activation (upregulation of CD203c) was consistently seen with exposure to red wine extract but not with resveratrol. Further, in patients reporting alcohol sensitivity, high concentrations of alcohol (0.1%) induced basophil activation. This was not seen in basophils from patients without alcohol sensitivity. Additionally, subjects reporting sensitivity to alcoholic beverages reacted to catechin but not resveratrol. Studied eosinophil populations did not react to any of the experimental substances.

**CONCLUSIONS:** Reactivity to alcoholic beverages in subjects with CRS and asthma may reflect in part the ability of ethanol acting in synergy with the polyphenolic compound catechin to activate basophils. Sensitivity to alcoholic beverages does not appear to involve eosinophils or resveratrol.